CLEARWATER GROUP
Environmental Services

FILE

4 February 2005

Ms. Joan Fleck
Associate Engineering Geologist
North Coast Regional Water Quality Control Board
5550 Skylane Boulevard, Suite A
Santa Rosa, CA 95403

Re: Groundwater Monitoring Report – First Quarter 2005
421 Santa Rosa Avenue
Santa Rosa, CA
Case No. 1TSR059
Clearwater Group Project No. AB021C

Dear Ms. Fleck:

At the request of Spaceco Storage and Mr. Franklin Wolmuth, the Clearwater Group (Clearwater) has prepared this First Quarter 2005 groundwater monitoring report for the site located at 421 Santa Rosa Avenue, Santa Rosa, Sonoma County, California. The report includes background information, groundwater monitoring activities, groundwater monitoring results, conclusions, recommendations, and planned activities.

BACKGROUND

Site Description

The site is located on the northwest corner of Santa Rosa and Sebastopol Avenues in Santa Rosa, Sonoma County, California (Figure 1). It is set in an area of combined residential and commercial use. Regional topography slopes gently toward the west. A former service station building exists on-site and is currently used as an automobile repair shop. An additional on-site building is currently used as a Greyhound Bus terminal. A site plan is shown in Figure 2.

Underground Storage Tanks Removal History

In July 1988, the underground storage tanks (USTs) were removed from the site. Three 10,000-gallon gasoline USTs were removed from a common excavation in the southern portion of the site, and one 550-gallon used oil UST was removed from another excavation in the western portion of the site (Figure 2). Associated product dispensing / vent lines and fuel dispensers were

also removed. Analytical results for soil samples collected from beneath the USTs during removal indicated elevated concentrations of petroleum hydrocarbons.

Corrective Action History

Harding Lawson and Associates (HLA) of Novato, California conducted a site investigation in 1989. HLA performed a preliminary site assessment with hand-augered shallow boreholes (B-1 though B-13) in locations near the former USTs and dispensing lines (Figure 2). The results of HLA's work were presented in their report dated April 24, 1989.

GeoPacific Investigations (GPI) of Novato, California installed three monitoring wells (MW-1 through MW-3) and drilled three additional soil borings (SB-1 through SB-3) in September 1991 (Figure 2). Results of this work were presented in GPI's Report for an *Initial Hydrogeologic Investigation for an Unauthorized Release of Petroleum Constituents* dated May 8, 1992.

GPI drilled additional soil and hydropunch borings (SB-14 though SB-28) in September 1994 to further characterize the extent of soil and groundwater contamination. Results of this work were presented in GPI's *Subsurface Soil/Groundwater Investigation* report dated September 22, 1994.

GPI directed excavation of contaminated soil in the area of the former USTs and dispensers during site remodeling efforts in 1996. During construction of a new Greyhound terminal in early 1996, crews encountered older dispenser lines and contaminated soil in the vicinity of the former southern dispenser island (Figure 2). Based on these observations, the Santa Rosa Fire Department requested removal of the lines and over-excavation of any associated contaminated soil. In February and May 1996, GPI supervised the over-excavation of approximately 400 cubic yards (cu. yd.) of soil from this area. The excavation did not extend deeper than 5 feet below ground surface (bgs). Approximately 250 cu yd of soil were transported to Redwood Landfill in Novato, California for disposal and the remaining 150 cu yd were aerated on-site to non-detectable concentrations of gasoline hydrocarbons, and then used as excavation backfill. Results of this work were presented in GPI's Report for *Over-excavation of Petroleum Hydrocarbon Contaminated Soils* dated August 14, 1996.

Additional over-excavation activities were performed in late 1996. GPI supervised the excavation of approximately 1,000 to 2,000 cu yd of additional soil (Figure 2). The maximum depth of the excavation was between 5 to 7 feet bgs. The work was performed in six phases consisting of excavation and aeration of approximately 150 to 200 cu yd at a time. Excavated soil was aerated between 4 and 7 days prior to confirmation sampling. Nearly all of the excavated soil was used as backfill following aeration. Approximately 300 to 400 cu yd of surplus excavated soil was transported to Redwood Landfill for disposal. Results of this work were presented in GPI's report for *Additional Over-excavation of Petroleum Hydrocarbon Contaminated Soils* dated November 11, 1996.

In May 2000, Clearwater oversaw the proper destruction of wells MW-1 and MW-2, which had been damaged during excavation and site redevelopment work. Well MW-3, also damaged and covered during site work, could not be located and thus has been abandoned in place. Clearwater supervised the installation of two replacement wells (MW-1A and MW-2A), and four additional plume delineation wells (MW-4 through MW-7). Results of these efforts were presented in Clearwater's *Additional Subsurface Investigation Report* dated May 31, 2000.

In December 2000, Clearwater supervised the installation of two additional downgradient plume delineation wells (MW-8 and MW-9). Results of these efforts were presented in Clearwater's *Problem Assessment and Groundwater Monitoring Report (Fourth Quarter 2000)* dated December 29, 2000.

Well construction data for all the available monitoring wells of the site is listed in Table 1.

Hydrogeology

The site is underlain predominantly by clay to a depth of approximately 17 feet bgs. A sand layer underlies the clay to a depth of approximately 20 feet bgs. Depth to groundwater has historically ranged from approximately 5 to 14 feet bgs, with flow toward the northwest and north-northwest.

Petroleum Hydrocarbons of Concern

The predominant hydrocarbons, which appear to have been released to the subsurface from the former UST system, consist of gasoline compounds. Specific compounds or compound groups, which have been consistently detected, include total petroleum hydrocarbons as gasoline (TPH-g), and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Methyl tertiary butyl ether (MTBE) has been detected by EPA Method 8260B in groundwater at a maximum concentration of 44 micrograms per liter (µg/L) in monitoring well MW-9 sampled on January 8, 2003.

Distribution and Mass of Sorbed-Phase Petroleum Hydrocarbons

The extent of residual sorbed-phase hydrocarbons has been determined. The "footprint" of sorbed-phase hydrocarbons resembles an ellipse, elongated toward the south. The lateral extent of sorbed-phase hydrocarbons appears to be restricted to just beneath the subject property. Sorbed-phase hydrocarbon concentrations appear to be greatest at the average depth of the capillary fringe (i.e., approximately 7.5 to 10 feet bgs); however, the total thickness of soil containing residual hydrocarbons ranges from approximately 7.5 to 15 feet bgs, with a shallower soil pocket present beneath the service bay building from approximately 5 to 15 feet bgs.

The total volume of soil impacted by TPH-g concentrations greater than 10 milligrams per kilogram (mg/kg) is estimated at approximately 63,000 cubic feet (cu ft) (or 2,300 cu yd) in-situ. This impacted soil volume contains approximately 1,716 pounds (lb) of gasoline hydrocarbons (or 280 gallons [gal.]).

Distribution and Mass of Dissolved Petroleum Hydrocarbons

The extent of the dissolved-phase hydrocarbons plume coincides with the general "footprint" of sorbed-phase hydrocarbon residues, but the edges of the dissolved-phase plume are more widespread. Maximum TPH-g and benzene concentrations detected in existing on-site wells have been 86,000 µg/L and 17,000 µg/L, respectively, in monitoring well MW-1A as sampled on May 18, 2000. However, dissolved-phase petroleum hydrocarbons appear to be restricted mostly to site boundaries.

It is estimated that on the order of 520,000 gallons of groundwater are affected by TPH-g with concentrations greater than 100 µg/L, and that on the order of 26 lb (or 4 gal.) of gasoline hydrocarbons reside in the dissolved-phase.

GROUNDWATER MONITORING ACTIVITIES

Groundwater Gauging, Purging, and Sampling

On 13 January 2005, Clearwater monitored all the eight existing monitoring wells (MW-1A, MW-2A, MW-4, MW-5, MW-6, MW-7, MW-8, and MW-9). An electronic water level indicator accurate to within ±0.01 feet was used to gauge the depth to groundwater in the monitoring wells, which were also monitored for the presence of Light Non-Aqueous Phase Liquids (LNAPL) prior to purging. No measurable thickness of LNAPL was observed in the wells. All work was performed in accordance with Clearwater's Field Protocols (Appendix A). The wells were purged of groundwater until the quality parameters of temperature, pH and conductivity stabilized, which occurred by approximately three wetted casing volumes.

Following recovery of water levels to at least 80% of their static levels, Clearwater collected groundwater samples from the monitoring wells using disposable polyethylene bailers. Samples were labeled, documented on a chain-of-custody form, and placed on ice in a cooler for transport to the project laboratory. Purging devices were decontaminated between wells in an Alconox® wash followed by double rinsing in clean tap water to prevent cross-contamination. Purge water and rinseate was stored in labeled 55-gallon drums pending future disposal. The drum was immediately removed from the site after monitoring activities for this quarter.

Dissolved Oxygen, ORP, Total and Ferrous Iron Field Testing

Following well purging, Clearwater monitored dissolved oxygen (DO), and oxidation-reduction potential (ORP) using pre-cleaned down well probes, and collected water samples for in-the-field iron testing (total iron, and ferrous iron) using portable iron test kits.

Laboratory Analyses

Kiff Analytical LLC (Kiff), a California state-certified laboratory in Davis, California analyzed the groundwater samples for TPH-g, BTEX, and MTBE by EPA Method 8260B. In addition, Kiff analyzed a sample from MW-1A for 1, 2-Dichloroethane (1, 2-DCA) by EPA Method 8260B.

GROUNDWATER MONITORING RESULTS

Groundwater Elevation and Flow

Measured groundwater elevations in this quarter are listed in Table 2. Depths to water ranged from 2.99 feet to 6.68 feet bgs. Depth to water data combined with top of casing elevation data were used to generate a groundwater elevation map (Figure 3.) Like the groundwater elevation contours obtained from the fourth quarter 2004 monitoring, current groundwater elevation contours indicate that the predominant direction of groundwater flow on the site is still northwesterly. The calculated hydraulic gradient on the site on 13 January 2005 was variable with an approximate maximum of 0.02 ft/ft (Refer to Figure 3 for an illustration of interpolated groundwater elevation contours). Groundwater flow direction observed during the current monitoring period is consistent with the fourth quarter 2004 observation. However, the maximum gradient is reduced from 0.04 ft/ft to 0.02 ft/ft.

Groundwater Analytical Results

TPH-g and volatile aromatic compounds (i.e., BTEX, and MTBE) were detected in samples from six wells this quarter (MW-1A, MW-2A, MW-4, MW-5, MW-6, and MW-7). The maximum concentration of TPH-g was 28,000 µg/L detected in MW-1A. Figure 4 provides an illustration of groundwater contaminant iso-concentration contours, which are based on the analytic results from this monitoring event. Benzene was detected in the samples collected from wells MW-1A, MW-2A, MW-4, and MW-7. The maximum concentration of benzene was 820 µg/L in MW-1A (Figure 4.). Samples from MW-6, MW-8, and MW-9 were free of detectable benzene concentrations.

Other BTEX compounds were detected in samples from MW-1A, MW-2A, MW-4, MW-5, MW-6, and MW-7. The highest concentrations of toluene (110 µg/L), ethylbenzene (1,900 µg/L), and total xylenes (2,6 00 µg/L) were detected in well MW-1A. MTBE was detected at concentrations ranging from 1.4 µg/L to 20 µg/L in wells MW-4, MW-7, MW-8, and MW-9. The analyte 1, 2-DCA was analyzed in the sample from well MW-1A only. Its concentration was below the laboratory detection limit of 1.0 µg/L.

Contaminant concentrations detected this quarter generally fall within historically and seasonally observed ranges, with continuation of overall decline. Elevated levels of TPH-g and benzene continued to be detected in on-site monitoring wells MW-1A, MW-2A, MW-4 and MW-5.

Based on the location of former contaminant sources on site and consistent groundwater flow toward the north-northwest, petroleum hydrocarbons in the area of MW-4 and MW-5 are interpreted to be the result of off-site sources (Refer to Figure 4 for an illustration of interpreted contaminant distribution and monitoring well locations). Although generally low level of TPH-g, and BTEX were found in MW-6, MW-7, MW-8, and MW-9 in the past, higher concentrations of TPH-g and benzene are observed in MW-7 in this quarterly event. Elevated concentration of MTBE is also found in MW-9 in this quarter. Concentration of MTBE in MW-8, however, is reducing to a relatively stable level

Cumulative groundwater analytical data are also summarized in Table 2. Complete laboratory reports and the chain-of-custody record are included Appendix B.

Empirical Determination of Contaminant First-Order Degradation Rates

If natural attenuation or biodegradation is occurring within a plume, a reduction of hydrocarbons concentrations or mass is usually observed over time. It usually occurs at a site, which has experienced source removal and/or some active remediation. If natural attenuation or biodegradation occurs, the rates actually overtake the rate at which petroleum hydrocarbons released from the sorbed-phase into the dissolved-phase. The process that hydrocarbons degrade often takes place at a first-order kinetics. First-order degradation rate can be determined by evaluating the change of either hydrocarbon concentrations from individual wells or total plume mass with time, if the plume has been delineated for an extended period of time. First-order degradation rates for the petroleum hydrocarbons beneath this site were estimated by using historical monitoring data obtained from well MW-1A.

Concentrations of TPH-g and benzene measured at MW-1A were plotted against time as a semi-log function. A degradation rate was determined by fitting a first-order kinetic equation to the plotted data. The method indicates that the plotted data are highly correlated with the first-order kinetic equation. The estimated first-order degradation rates for TPH-g and benzene in MW-1A are 0.0579 per day and 0.1444 per day, respectively. The results are shown in Figure 5.

EVALUATION OF MONITORED NATURAL ATTENUATION

Natural attenuation of dissolved hydrocarbon plumes may includes the following processes: biodegradation, volatilization, dispersion/advection, and sorption[1]. Although all of these processes contribute to actual or apparent removal of contaminant mass from the plume, only biodegradation process was examined for this site because it tends to be the most dominant process and, thus, has the greatest potential for site closure applications including enhanced bioremediation or Monitored Natural Attenuation (MNA).

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[1]McAllister, P.M. and Chiang, C.Y., 1994. "A Practical Approach to Evaluating Natural Attenuation of Contaminants in Ground Water." In *Ground Water Monitoring and Remediation,* Spring 1994.

Biodegradation Processes and Related Indicators

During biodegradation, microbes utilize electron acceptors to oxidize hydrocarbons to carbon dioxide and water; and support the growth of cells. In aerobic degradation, the electron acceptor is dissolved oxygen (DO). In anaerobic degradation, compounds other than oxygen are used as electron acceptors. The reactions that yield the most energy take precedence over those reactions that yield less energy. This results in electron acceptors being used up in the following preferential order: oxygen, nitrate, ferric-iron oxides, sulfate, and carbon dioxide (methanogenesis). Since oxygen and nitrate are toxic to sulfate-reducing organisms, sulfate cannot be used as an electron acceptor until oxygen and nitrate have been sufficiently depleted[2]. Metabolism through iron reduction uses ferric-iron oxides and produces ferrous iron (dissolved) as a by-product.

Reduction-oxidation potential (ORP) is a measure of the electron activity in a solution. As electron acceptors are consumed within the plume during biodegradation, ORP will drop within the plume. Each biochemical pathway has an associated range of ORP values influenced by the influx of electrons to the system by groundwater recharge. ORP values can thus be used to evaluate the active biochemical pathway(s) using electron acceptor depletion as a basis. Alternatively, when electron depletion data is inconclusive due to high groundwater recharge, biodegradation will be confirmed and the active biochemical pathway assessed by evaluating ORP values only.

Results of Dissolved Oxygen, ORP, and Total and Ferrous Iron Field Testing

An MNA study was previously performed and reported in the fourth quarter 2004 groundwater monitoring report. The study focused on aerobic and anaerobic biodegradation processes. The results of this study indicate that both aerobic and anaerobic biodegradation processes are occurring within the contaminant plume. The highest concentrations of "hydrocarbon degraders" (both aerobic and anaerobic) occur at MW-1A, where hydrocarbon concentrations are highest. Meanwhile, on the aerobic end, the lowest total bacterial count (by more than an order of magnitude compared to MW-7 and MW-9) occurs at MW-1A. This suggests that anaerobic process probably dominates within the plume. Oxygen depletion would be expected.

Field DO data in this quarter shows that oxygen level is reduced, compared with the results of the fourth quarter 2004, in wells MW-1A, MW-2A, MW-4 and MW-5, where hydrocarbon concentrations are higher; although 0.0 mg/L DO concentrations were measured in MW-6 and MW-9. Oxidation-reduction potential measured in this quarter ranges from 27 millivolts (mV) in MW-5 to 44 mV in MW-7; which is consistent with the ORP levels measured in the fourth quarter 2004 (between +15 to +63 mV). This range may indicate the existence of reducing

[2]Wiedemeier, T.H., Wilson, J.T., Kampbell, D.H., Miller, R.N. and Hansen, J.H. (1995). Technical Protocol for implementing Intrinsic Remediation with Long-Term Monitoring for Natural Attenuation of Fuel Contamination Dissolved in Groundwater. Vol 1. AFCE, Technology Transfer Division, Brooks AFB, San Antonio, TX.

conditions. Because ferrous iron exists in the reduced state, higher ferrous-iron to total iron ratio may indicate the existence of anaerobic conditions. Within this quarter, total iron concentrations range from 0.0 mg/L in MW-6 and MW-8 to 3.8 in MW-2A and MW-5. Ferrous iron ranged from 0.0 mg/L in MW-6, MW-7, MW-8, and MW-9 to 2.8 mg/L in MW-1A and MW-4. The resulted ferrous-iron to total iron ratio ranges from 63% to 82% in wells MW-1A, MW-2A, MW-4 and MW-5, where hydrocarbon concentrations are higher. The ratio for these four wells ranged from 61% to 93% in the fourth quarter 2004. The DO, ORP, total iron, and ferrous iron data measured in this quarter are listed in Table 3.

CONCLUSIONS

- Groundwater flow direction observed in this quarter is consistent with the fourth quarter 2004 observation. However, the maximum gradient is reduced from 0.04 ft/ft to 0.02 ft/ft.
- Highest hydrocarbon concentrations exist on-site. The maximum TPH-g and benzene concentrations of 28,000 µg/L and 820 µg/L were detected in MW-1A. Samples from MW-6, MW-8, and MW-9 were free of detectable benzene concentrations.
- Although low level or less than detection limits of TPH-g, and BTEX were found in cross-gradient and down gradient wells MW-6, MW-7, MW-8, and MW-9 in the past, higher concentrations of TPH-g and benzene are observed in MW-7 in this quarterly event. Elevated concentration of MTBE is also found in MW-9 in this quarter. Concentration of MTBE in MW-8, however, is reducing to a relatively stable level
- First-order degradation for TPH-g and benzene likely exists on-site. The estimated first-order degradation rates for TPH-g and benzene in MW-1A are 0.0579 per day and 0.1444 per day, respectively
- Both concentration change over time and measured MNA parameter values indicate the presence of anaerobic degradation on site.

RECOMMENDATIONS

- Quarterly groundwater monitoring and measurement of MNA indicators including DO, ORP, total irons, and ferrous irons should continue prior to the site remediation.
- Both enhanced biodegradation and MNA should be considered as soon as possible prior to the significant off-site migration of hydrocarbons and MTBE occurs.

PLANNED ACTIVITIES

Clearwater performed a soil vapor extraction (SVE) pilot test on 31 August 2004. Results of the SVE pilot test indicate that SVE will not be a feasible option for site remediation. Clearwater is currently evaluating remedial feasibility alternatives for the site, and anticipates that the Corrective Action Plan (CAP) will be completed in February 2005.

Given the low-permeability sediments on site, Clearwater has evaluated an enhanced bioremediation technology, which does not require high-permeability soils to be effective.

Oxygen can be introduced in the subsurface to enhance biodegradation of hydrocarbons by indigenous microbial populations, which were demonstrated to be present by the previous MNA study.

Groundwater monitoring shows low DO concentration and low ORP on site. Presumed biodegradation of hydrocarbons typically causes oxygen depletion. Measured high total iron to ferrous iron ratios further substantiate that oxygen depletion has occurred within the hydrocarbon plume. Aerobic biodegradation activity will be improved with oxygen delivery. Clearwater will be evaluating a variety of in-situ remediation technologies, including oxygen delivery systems for enhanced aerobic bioremediation in the upcoming CAP.

CLEARWATER
GROUP, INC.
Environmental Services

CERTIFICATION

This report was prepared under the supervision of a professional State of California Registered Geologist at Clearwater Group. All statements, conclusions and recommendations are based solely upon published results from previous consultants, field observations by Clearwater Group, and laboratory analysis performed by a California DHS-certified laboratory related to the work performed by Clearwater Group.

Information and interpretation presented herein are for the sole use of the client and regulating agency. The information and interpretation contained in this document should not be relied upon by a third party.

The service performed by Clearwater Group has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the area of the site. No other warranty, expressed or implied, is made.

Best regards,
Clearwater Group

Jim Ho
Principal Engineer

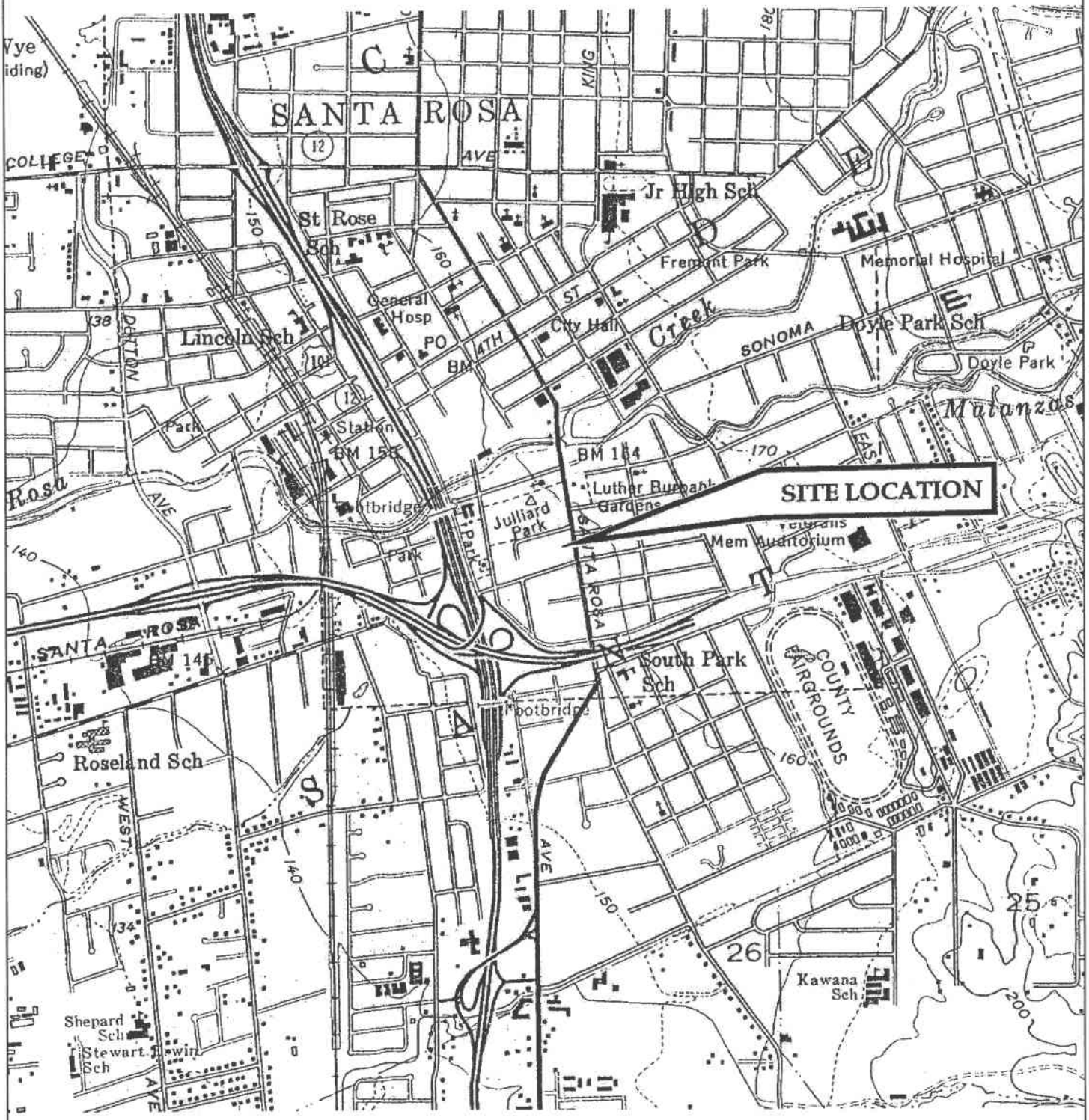
James A. Jacobs, RG# 4[illegible], CHG#[illegible]
Chief Hydrogeologist

REGISTERED GEOLOGIST
JAMES ALAN JACOBS
NO. 88
CERTIFIED HYDROGEOLOGIST
STATE OF CALIFORNIA

Cc: Mr. Franklin Wolmuth
P.O. Box 640551
San Francisco, CA 94164

Mr. Mark Pedroia
Santa Rosa Fire Department
955 Sonoma Avenue
Santa Rosa, CA 95404

FIGURES



NOT TO SCALE

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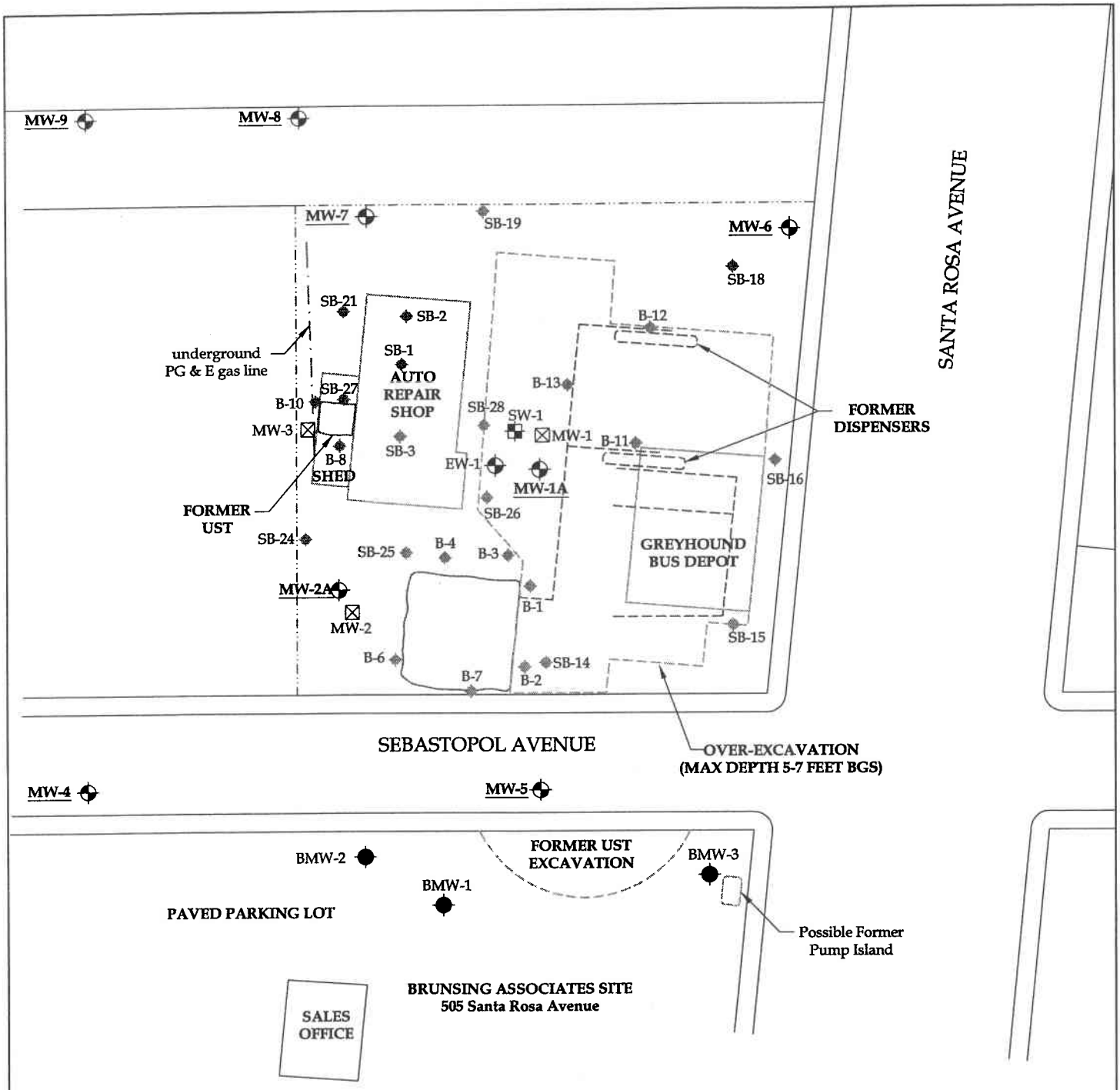
SITE LOCATION MAP
421 Santa Rosa Avenue
Santa Rosa, California

CLEARWATER GROUP

Project No.	Figure Date	Figure
AB021C	**01/05**	**1**



LEGEND

MW-1	MONITORING WELL
BMW-1	BRUNSING ASSOCIATES MONITORING WELL
MW-3	DESTRYOED/UNRECOVERABLE MONITORING WELL
B-7	SOIL BORING IN LIEU OFUST EXCAVATION SAMPLING BY HLA
SB-25	SOIL BORING/HYDROPUNCH BY GPI

N

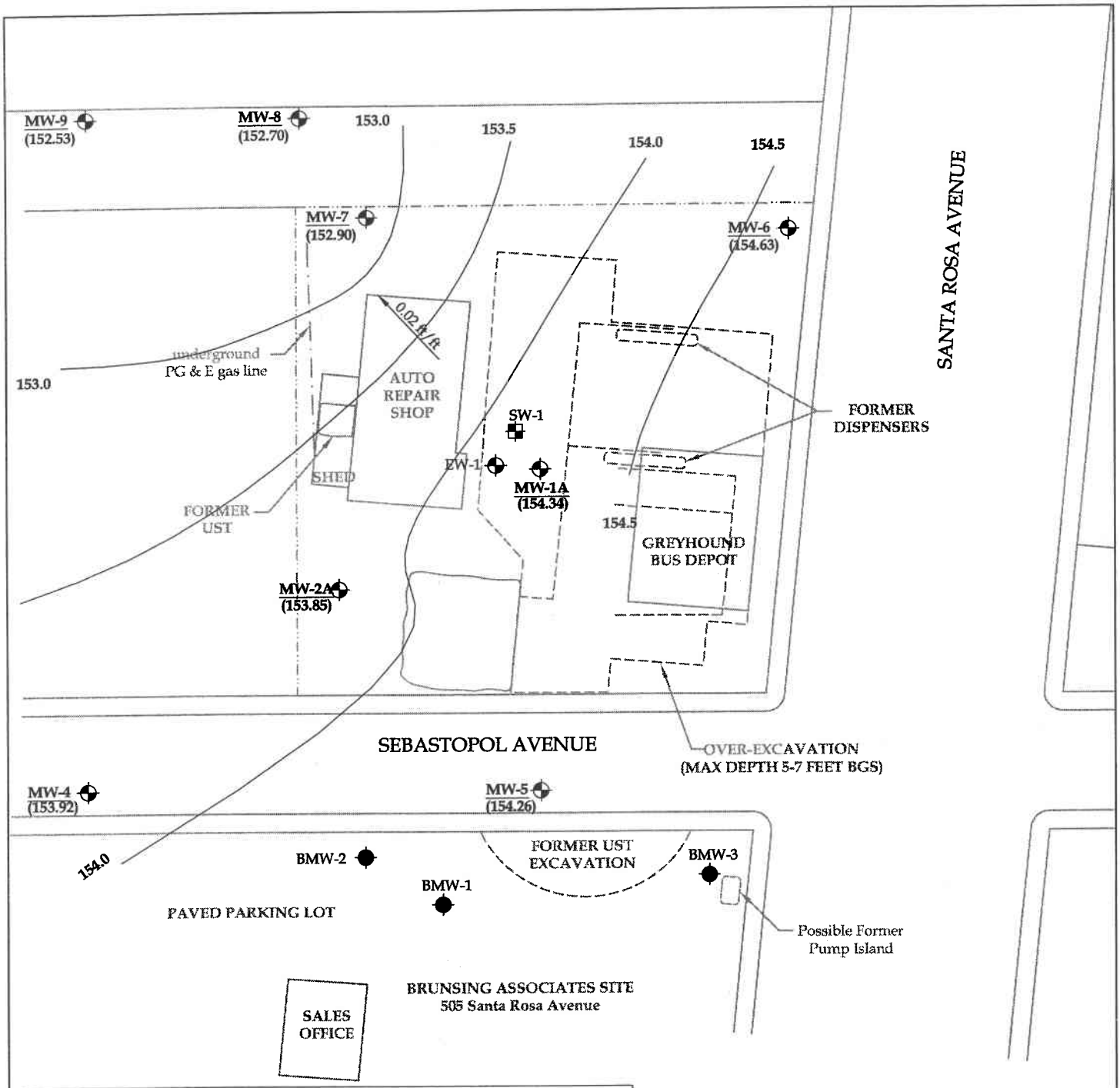
0 40 80

APPROXIMATE SCALE IN FEET

SITE PLAN
421 Santa Rosa Avenue
Santa Rosa, California

CLEARWATER GROUP

Project No.	Figure Date	Figure
AB021C	01/05	2



LEGEND

MW-1	MONITORING WELL
BMW-1	BRUNSING ASSOCIATES MONITORING WELL
152.00'	GROUNDWATER ELEVATION CONTOUR (HEIGHT IN FEET ABOVE MSL)
0.02 ft/ft	APPROX. GROUNDWATER FLOW DIRECTION & GRADIENT
(152.00)	GROUNDWATER ELEVATION IN FEET ABOVE MSL

N

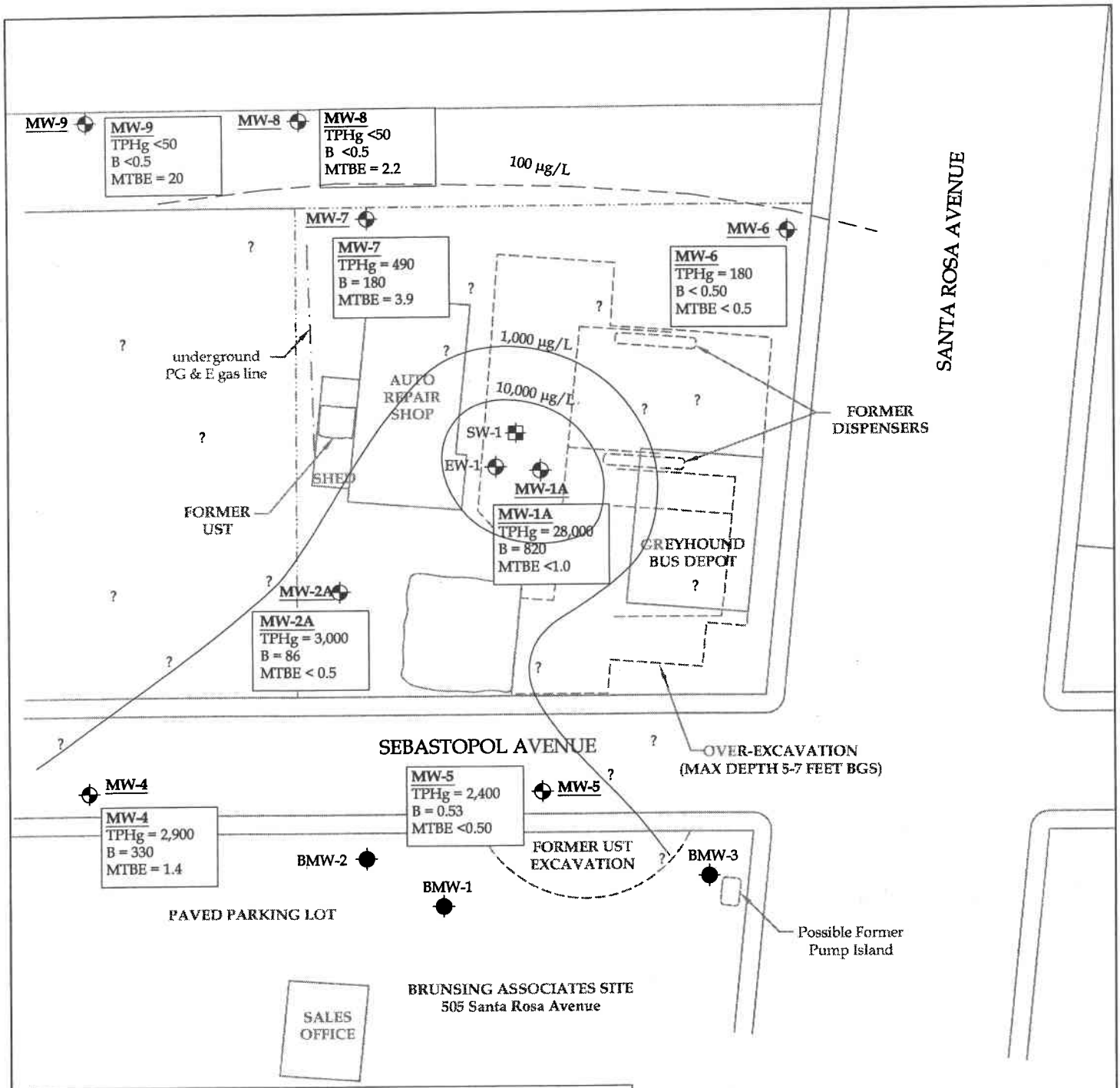
0 40 80

APPROXIMATE SCALE IN FEET

GROUNDWATER ELEVATION MAP
January 13, 2005
421 Santa Rosa Avenue
Santa Rosa, California

CLEARWATER GROUP

Project No.	Figure Date	Figure
AB021C	1/31/05	3



LEGEND

MW-1 — MONITORING WELL

BMW-1 — BRUNSING ASSOCIATES MONITORING WELL

BEN. = 10 µg/L — BENZENE ISO-CONCENTRATION CONTOUR

MW-1
TPHg =21,000
B = 1,600
MTBE = 14

CONCENTRATIONS OF: TOTAL PARTS HYDROCARBONS AS GASOLINE (TPHg), BENZENE (B), AND METHYL TERT-BUTYL ETHER (MTBE).ALL CONCENTRATIONS REPORTED IN MICROGRAMS PER LITER (µg/L)

N

0 40 80

APPROXIMATE SCALE IN FEET

TPH-g DISTRIBUTION MAP
January 13, 2005

421 Santa Rosa Avenue
Santa Rosa, California

CLEARWATER GROUP

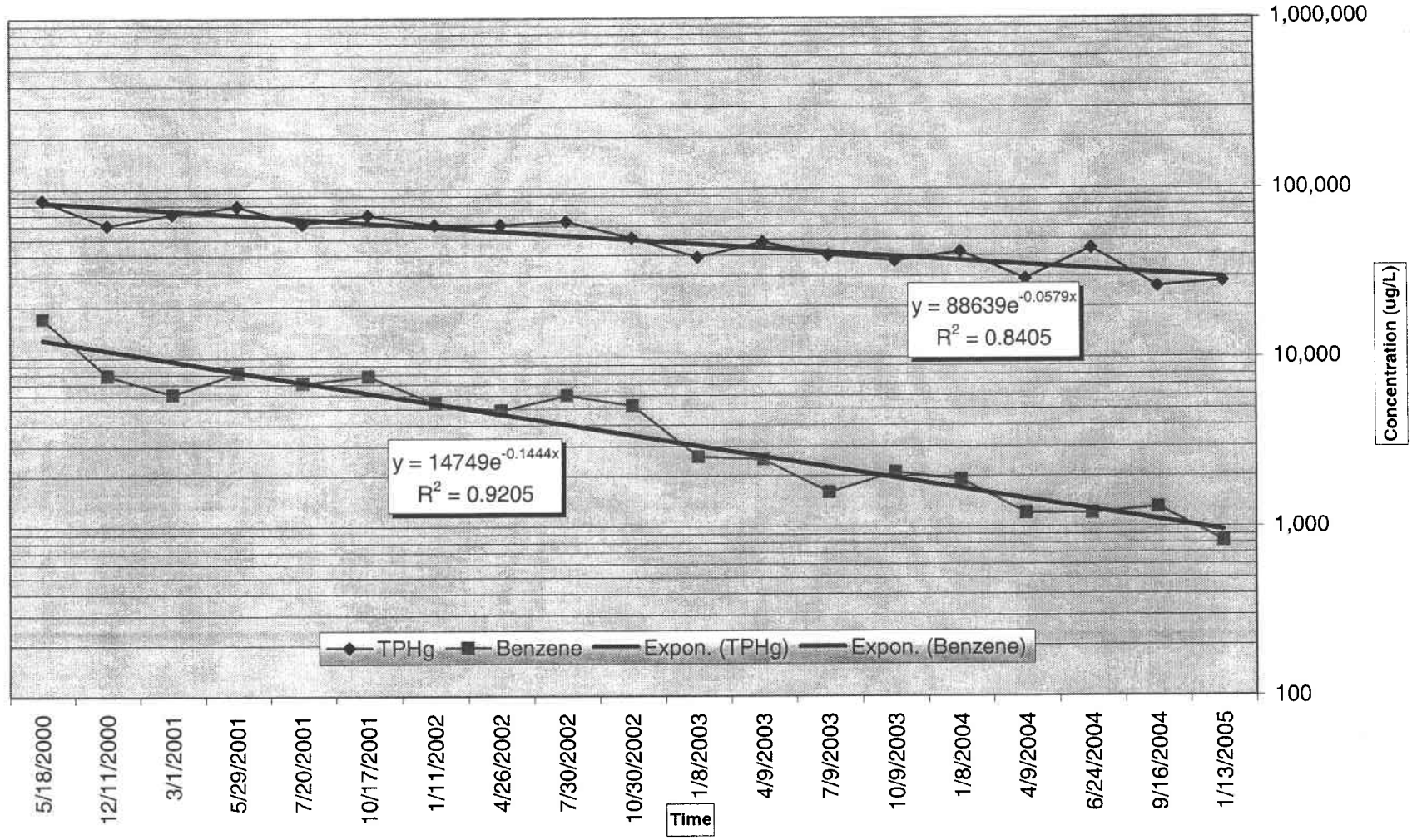
Project No.	Figure Date	Figure
AB021C	1/31/05	4

Figure 5

Empirical Evaluation of First Order Degradation Rate

MW-1A: TPHg/Benzene vs. Time

421 Santa Rosa Avenue, Santa Rosa, CA



TABLES

Table 1
WELL CONSTRUCTION DATA
421 Santa Rosa Avenue
Santa Rosa, California
Clearwater Group Project No. AB021C

Well I.D.	Date installed	Intstalled by	Casing diameter (inches)	Borehole diameter (inches)	Total depth (feet)	Screened Interval (feet)	Sand Interval (feet)	Slot Size (inches)	Sand Size
MW-1	12/13/1991	GPI	2	8	24	7 - 24	6 - 24	0.01	Monterey #2/12
	Destroyed 5/16/00								
MW-2	12/13/1991	GPI	2	8	25	7 - 25	6 - 25	0.01	Monterey #2/12
	Destroyed 5/16/00								
MW-3	12/16/1991	GPI	2	8	22	7 - 22	6 - 22	0.01	Monterey #2/12
	Could not be located / Unrecoverable following soil excavation remedial activities in 1996								
MW-1A	5/16/2000	Clearwater	2	8	20	5 - 20	4 - 20	0.02	Lonestar #3
MW-2A	5/16/2000	Clearwater	2	8	20	5 - 20	4 - 20	0.02	Lonestar #3
MW-4	5/17/2000	Clearwater	2	8	20	5 - 20	4 - 20	0.02	Lonestar #3
MW-5	5/17/2000	Clearwater	2	8	20	5 - 20	4 - 20	0.02	Lonestar #3
MW-6	5/16/2000	Clearwater	2	8	20	5 - 20	4 - 20	0.02	Lonestar #3
MW-7	5/16/2000	Clearwater	2	8	20	5 - 20	4 - 20	0.02	Lonestar #3
MW-8	12/5/2000	Clearwater	2	8	20	5 - 20	4 - 20	0.02	Lonestar #3
MW-9	12/5/2000	Clearwater	2	8	20	4 - 20	3.5 - 20	0.02	Lonestar #3

GPI = GeoPacific Investigations of Novato, California
Clearwater = Clearwater Group of Point Richmond, California

Table 2
GROUNDWATER ELEVATIONS AND ANALYTICAL DATA
421 Santa Rosa Avenue
Santa Rosa, California
Clearwater Group Project No. AB021C

Well-No.	Date	TOC (feet)	DTW (feet)	GWE (feet)	LNAPL (feet)	O&G (µg/L)	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	Benzene (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	ETBE, TBA, DIPE, TAME (µg/L)	1,2 DCA (µg/L)	EDB (µg/L)
MW-1	12/26/1991	159.42	13.70	145.76	0.05	170,000	<200	82,000^	67,000	17,000	21,000	2,300	17,000	--	--	47	--
	3/28/1992	159.42	6.42	153.04	0.05	90,000	<200	3,000	120,000	35,000	27,000	1,200	2,100	--	--	110	--
	6/16/1992	159.42	10.02	149.42	0.03	<5,000	<200	12,000^	62,000	15,000	8,100	1,800	8,300	--	--	52	--
	9/19/1992	159.42	13.16	146.36	0.13	<5,000	<200	11,000^	390,000	27,000	19,000	3,600	18,000	--	--	<0.4	--
	12/13/1992	159.42	--	--	0.25	<5,000	<200	3,600^	49,000	18,000	13,000	790	10,000	--	--	39	--
	9/7/1994	159.42	--	--	0.06	<5,000	<200	61,000^	180,000	23,000	13,000	390	18,000	--	--	<0.4	--
	5/16/2000	Destroyed and replaced by MW-1A in adjacent borehole.															
MW-1A	5/18/2000	160.00	5.71	154.29	0.00	--	--	--	86,000	17,000	9,800	4,100	19,000	<250	--	--	--
	12/11/2000	160.00	10.30	149.70	0.00	--	--	--	61,000	7,900	2,900	3,400	14,000	<250†	--	--	--
	3/1/2001	159.30	5.36	153.94	0.00	--	--	--	71,000	6,100	2,100	3,200	13,000	<20	<20 to <200	<20	<20
	5/29/2001	159.30	8.69	150.61	0.00	--	--	--	79,000	8,200	3,000	3,300	13,000	<25	--	--	--
	7/20/2001	159.30	10.39	148.91	0.00	--	--	--	62,000	7,100	1,900	3,100	13,000	<25	--	<2.5	--
	10/17/2001	159.30	11.70	147.60	0.00	--	--	--	70,000	7,800	1,500	3,800	12,000	<25	--	<25	--
	1/11/2002	159.30	5.94	153.36	0.00	--	--	--	61,000	5,400	1,200	2,600	8,700	<20	--	<20	--
	4/26/2002	159.30	7.21	152.09	0.00	--	--	--	61,000	4,900	1,400	3,100	11,000	<20	--	<20	--
	7/30/2002	159.30	9.91	149.39	0.00	--	--	--	64,000	6,000	1,300	3,000	11,000	<10	--	--	--
	10/30/2002	159.30	11.16	148.14	0.00	--	--	--	51,000	5,200	420	3,400	5,200	<20	--	<2.5	--
	1/8/2003	159.30	5.32	153.98	0.00	--	--	--	39,000	2,600	600	2,100	6,600	2	--	<2.0	--
	4/9/2003	159.30	6.40	152.90	0.00	--	--	--	48,000	2,500	700	2,300	6,400	<1.5	--	<1.5	--
	7/9/2003	159.30	7.36	151.94	sheen	--	--	--	40,000	1,600	420	2,500	6,800	<1.0	--	<1.0	--
	10/9/2003	159.30	11.22	148.08	sheen	--	--	--	37,000	2,100	250	2,700	3,600	0.92	--	<0.50	--
	1/8/2004	159.30	5.00	154.30	sheen	--	--	--	42,000	1,900	410	2,200	5,600	<0.5	--	<0.5	--
	4/9/2004	159.30	6.62	152.68	0.00	--	--	--	29,000	1,200	280	1,600	4,200	<20	--	<20	--
	6/24/2004	159.30	10.05	149.25	0.00	--	--	--	44,000	1,200	210	2,200	3,600	<1.5	--	<1.5	--
	9/16/2004	159.30	12.77	146.53	0.00	--	--	--	26,000	1,300	130	1,800	2,400	0.76	TBA=12	<0.5	--
	1/13/2005	**159.30**	**4.96**	**154.34**	**0.00**	**--**	**--**	**--**	**28,000**	**820**	**110**	**1,900**	**2,600**	**<1.0**	**--**	**<1.0**	**--**
MW-2	12/26/1991	159.56	12.92	146.64	0.00	--	--	--	910	200	1.0	<0.50	32	--	--	--	--
	3/28/1992	159.56	5.28	154.28	0.00	--	--	--	38,000	6,500	350	1,500	1,800	--	--	--	--
	6/16/1992	159.56	9.05	150.51	0.00	--	--	--	15,000	3,000	250	1,300	1,300	--	--	--	--
	9/19/1992	159.56	12.21	147.35	0.00	--	--	--	8,700	1,100	34	340	140	--	--	--	--
	12/13/1992	159.56	--	--	0.00	--	--	--	4,500	1,400	190	490	750	--	--	--	--
	9/7/1994	159.56	--	--	0.00	<5,000	<200	1,100^	3,200	560	9.4	120	23	--	--	<0.40	--
	5/16/2000	Destroyed and replaced by MW-2A in adjacent borehole.															
MW-2A	5/18/2000	159.54	6.17	153.37	0.00	--	--	--	4,200	86	<5.0	300	260	<50†	--	--	--
	12/11/2000	159.54	11.14	148.40	0.00	--	--	--	2,700	110	11	94	91	<100†	--	--	--
	3/1/2001	158.83	5.54	153.29	0.00	--	--	--	2,800	47	0.58	96	46	<0.50	<0.50 to <5.0	<0.50	<0.50
	5/29/2001	158.83	8.91	149.92	0.00	--	--	--	6,500	100	1.3	400	100	<0.50	--	--	--
	7/20/2001	158.83	10.61	148.22	0.00	--	--	--	9,100	190	3.0	800	320	<2.5	--	--	--
	10/17/2001	158.83	12.59	146.24	0.00	--	--	--	4,000	26	0.6	84	8	<0.50	--	--	--
	1/11/2002	158.83	4.51	154.32	0.00	--	--	--	100	9.6	<0.50	<0.50	<0.50	<0.50	--	--	--
	4/26/2002	158.83	9.21	149.62	0.00	--	--	--	7,100	160	2.3	1,000	85	<0.50	--	--	--

Table 2
GROUNDWATER ELEVATIONS AND ANALYTICAL DATA
421 Santa Rosa Avenue
Santa Rosa, California
Clearwater Group Project No. AB021C

Well-No.	Date	TOC (feet)	DTW (feet)	GWE (feet)	LNAPL (feet)	O&G (µg/L)	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	Benzene (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	ETBE, TBA, DIPE, TAME (µg/L)	1,2 DCA (µg/L)	EDB (µg/L)
MW-2A	7/30/2002	158.83	10.25	148.58	0.00	--	--	--	6,400	98	1.1	570	63	<0.50	--	--	--
	10/30/2002	158.83	12.31	146.52	0.00	--	--	--	2,700	46	<0.50	180	4.5	<0.50	--	--	--
	1/8/2003	158.83	5.04	153.79	0.00	--	--	--	5,000	240	<2.0	430	14.0	<2.0	--	--	--
	4/9/2003	158.83	6.40	152.43	0.00	--	--	--	8,400	170	<2.0	600	33	<2.0	--	--	--
	7/9/2003	158.83	8.48	150.35	0.00	--	--	--	8,400	150	<2.5	680	33	<2.5	--	--	--
	10/9/2003	158.83	11.66	147.17	sheen	--	--	--	4,500	95	0.82	250	8.1	<0.50	--	--	--
	1/8/2004	158.83	5.30	153.53	sheen	--	--	--	3,400	52	0.76	180	3.1	<0.50	--	--	--
	4/9/2004	158.83	6.63	152.20	0.00	--	--	--	3,600	49	0.64	210	4.4	<0.50	--	--	--
	6/24/2004	158.83	No Data - Vehicle Obstructed Access to Well						No Data - Vehicle Obstructed Access to Well						--	--	--
	9/16/2004	158.83	13.17	145.66	0.00	--	--	--	2,000	56	4.70	48	19.0	<0.50	ND	--	--
	1/13/2005	**158.83**	**4.98**	**153.85**	0.00	--	--	--	**3,000**	**86**	**<0.50**	**190**	**1.7**	**<0.50**	--	--	--
MW-3	12/26/1991	159.37	14.32	145.05	0.00	<5,000	<200	<50	<50	3.3	<0.50	<0.50	0.70	--	--	1.9	--
	3/28/1992	159.37	6.94	152.43	0.00	<5,000	<200	<50	<50	<0.50	<0.50	<0.50	<0.50	--	--	<0.40	--
	6/16/1992	159.37	10.82	148.55	0.00	<5,000	<200	160^	320	270	1.2	9.7	13	--	--	1.1	--
	9/19/1992	159.37	13.56	145.81	0.00	<5,000	<200	<50	1,100	1.9	<0.50	<0.50	<0.50	--	--	2.6	--
	12/13/1992	159.37	--	--	0.00	<5,000	<200	150^	140	43	<0.50	4.4	12	--	--	<0.40	--
	9/7/1994	159.37	--	--	0.00	<5,000	<200	110^	<50	<0.50	<0.50	<0.50	<0.50	--	--	<0.40	--
	5/16/2000	Well could not be located following construction activities, assumed to be buried.															
MW-4	5/18/2000	157.63	4.50	153.13	0.00	--	--	--	36,000	4,600	1,100	1,800	6,900	<500†	--	--	--
	12/11/2000	157.63	9.08	148.55	0.00	--	--	--	17,000	3,500	280	600	1,600	<250†	--	--	--
	3/1/2001	156.91	3.24	153.67	0.00	--	--	--	19,000	2,400	370	640	2,100	<10	DIPE = 12	<10	<10
	5/29/2001	156.91	6.92	149.99	0.00	--	--	--	29,000	3,800	450	770	2,400	<20	--	--	--
	7/20/2001	156.91	8.79	148.12	0.00	--	--	--	13,000	3,000	88	230	300	1.9	--	--	--
	10/17/2001	156.91	10.56	146.35	0.00	--	--	--	13,000	3,300	68	280	240	<20	--	--	--
	1/11/2002	156.91	5.05	151.86	0.00	--	--	--	6,500	540	59	170	450	<2.0	--	--	--
	4/26/2002	156.91	5.03	151.88	0.00	--	--	--	14,000	1,400	200	450	1,000	0.95	--	--	--
	7/30/2002	156.91	8.26	148.65	0.00	--	--	--	16,000	2,800	180	390	1,100	1.1	--	--	--
	10/30/2002	156.91	10.17	146.74	0.00	--	--	--	12,000	2,700	45	150	87	<10	--	--	--
	1/8/2003	156.91	3.43	153.48	0.00	--	--	--	3,900	570	47	120	240	<2.5	--	--	--
	4/9/2003	156.91	4.30	152.61	0.00	--	--	--	12,000	1,100	95	290	460	<5.0	--	--	--
	7/9/2003	156.91	6.47	150.44	sheen	--	--	--	14,000	1,600	93	290	460	<10	--	--	--
	10/9/2003	156.91	9.59	147.32	0.00	--	--	--	12,000	2,300	49	180	170	<5.0	--	--	--
	1/8/2004	156.91	6.35	150.56	sheen	--	--	--	4,400	570	39	120	210	<3.0	--	--	--
	4/9/2004	156.91	5.06	151.85	0.00	--	--	--	11,000	1,700	97	270	500	<2.5	--	--	--
	6/24/2004	156.91	7.75	149.16	0.00	--	--	--	8,500	1,500	52	160	220	<5.0	--	--	--
	9/16/2004	156.91	11.04	145.87	0.00	--	--	--	8,500	1,700	28	79	68	<5.0	ND	--	--
	1/13/2005	**156.91**	**2.99**	**153.92**	**0.00**	--	--	--	**2,900**	**330**	**17**	**60**	**88**	**1.4**	--	--	--
MW-5	5/18/2000	158.13	4.01	154.12	0.00	--	--	--	18,000	90	220	700	3,100	<250†	--	--	--
	12/11/2000	158.13	7.86	150.27	0.00	--	--	--	5,200	99	46	200	650	<100†	--	--	--
	3/1/2001	157.42	3.31	154.11	0.00	--	--	--	17,000	20	110	530	2,100	<10	<3.0 to <30	<3.0	<3.0
	5/29/2001	157.42	6.81	150.61	0.00	--	--	--	5,900	70	23	100	330	<0.50	--	--	--
	7/20/2001	157.42	8.67	148.75	0.00	--	--	--	5,500	93	13	90	310	<1.0	--	--	--
	10/17/2001	157.42	10.39	147.03	0.00	--	--	--	5,200	130	4.6	40	69	1.6	--	--	--
	1/11/2002	157.42	4.13	153.29	0.00	--	--	--	8,300	4.8	27	170	580	<2.0	--	--	--
	4/26/2002	157.42	4.93	152.49	0.00	--	--	--	6,500	16	29	160	530	<2.0	--	--	--
	7/30/2002	157.42	8.13	149.29	0.00	--	--	--	4,300	38	10	120	250	<1.0	--	--	--

Table 2
GROUNDWATER ELEVATIONS AND ANALYTICAL DATA
421 Santa Rosa Avenue
Santa Rosa, California
Clearwater Group Project No. AB021C

Well-No.	Date	TOC (feet)	DTW (feet)	GWE (feet)	LNAPL (feet)	O&G (µg/L)	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	Benzene (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	ETBE, TBA, DIPE, TAME (µg/L)	1,2 DCA (µg/L)	EDB (µg/L)
MW-5	10/30/2002	157.42	10.04	147.38	0.00	--	--	--	3,800	130	8.4	60	80	0.81	--	--	--
	1/8/2003	157.42	3.36	154.06	0.00	--	--	--	6,000	9.8	24.0	130	410	<1.0	--	--	--
	4/9/2003	157.42	4.35	153.07	0.00	--	--	--	12,000	<5.0	24	310	1,000	<5.0	--	--	--
	7/9/2003	157.42	6.43	150.99	0.00	--	--	--	3,200	31	5.9	35	50	<0.50	--	--	--
	10/9/2003	157.42	9.60	147.82	0.00	--	--	--	3,100	40	4.6	22	36	0.90	--	--	--
	1/8/2004	157.42	6.20	151.22	0.00	--	--	--	4,600	4	12.0	100	270	0.51	--	--	--
	4/9/2004	157.42	4.98	152.44	0.00	--	--	--	3,700	8.2	5.3	22	34	0.53	--	--	--
	6/24/2004	157.42	7.85	149.57	0.00	--	--	--	3,900	14.0	4.2	44	85	0.86	--	--	--
	9/16/2004	157.42	11.01	146.41	0.00	--	--	--	2,300	19.0	2.4	8	12	0.97	ND	--	--
	1/13/2005	**157.42**	**3.16**	**154.26**	**0.00**	**--**	**--**	**--**	**2,400**	**0.5**	**2.8**	**32**	**68**	**<0.50**	**--**	**--**	**--**
MW-6	5/18/2000	159.65	6.00	153.65	0.00	--	--	--	330	4.2	<0.50	12	3.2	<5.0†	--	--	--
	12/11/2000	159.65	10.14	149.51	0.00	--	--	--	130*	0.96	<0.50	<0.50	<0.50	<5.0†	--	--	--
	3/1/2001	158.95	5.77	153.18	0.00	--	--	--	200	<0.50	<0.50	5.3	<0.50	<0.50	<0.50 to <5.0	<0.50	<0.50
	5/29/2001	158.95	8.46	150.49	0.00	--	--	--	120	<0.50	<0.50	1.1	<0.50	<0.50	--	--	--
	7/20/2001	158.95	10.27	148.68	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--
	10/17/2001	158.95	11.78	147.17	0.00	--	--	--	<50	<0.50	<0.50	0.72	<0.50	<0.50	--	--	--
	1/11/2002	158.95	5.48	153.47	0.00	--	--	--	410	<0.50	<0.50	6.5	<0.50	<0.50	--	--	--
	4/26/2002	158.95	9.74	149.21	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--
	7/30/2002	158.95	9.60	149.35	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--
	10/30/2002	158.95	11.55	147.40	0.00	--	--	--	260	<0.50	<0.50	5.8	<0.50	<0.50	--	--	--
	1/8/2003	158.95	4.97	153.98	0.00	--	--	--	87	<0.50	<0.50	1.1	<0.50	<0.50	--	--	--
	4/9/2003	158.95	6.05	152.90	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--
	7/9/2003	158.95	8.02	150.93	0.00	--	--	--	360	17	<0.50	5.4	<0.50	0.55	--	--	--
	10/9/2003	158.95	10.89	148.06	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--
	1/8/2004	158.95	4.50	154.45	0.00	--	--	--	140	<0.50	<0.50	0.82	<0.50	<0.50	--	--	--
	4/9/2004	158.95	6.42	152.53	0.00	--	--	--	53	<0.50	<0.50	1.00	<0.50	<0.50	--	--	--
	6/24/2004	158.95	9.33	149.62	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--
	9/16/2004	158.95	12.28	146.67	0.00	--	--	--	<50	<0.50	0.67	0.68	1.30	<0.50	ND	--	--
	1/13/2005	**158.95**	**4.32**	**154.63**	**0.00**	**--**	**--**	**--**	**180**	**<0.50**	**<0.50**	**2.90**	**<0.50**	**<0.50**	**--**	**--**	**--**
MW-7	5/18/2000	160.28	8.82	151.46	0.00	--	--	--	430	150	1.5	17	21	<5.0†	--	--	--
	12/11/2000	160.28	13.32	146.96	0.00	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0†	--	--	--
	3/1/2001	159.58	7.57	152.01	0.00	--	--	--	840	430	<1.0	<1.0	<1.0	6.8	TBA = 20	<1.0	<1.0
	5/29/2001	159.58	11.11	148.47	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	1.7	--	--	--
	7/20/2001	159.58	12.72	146.86	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	1.6	--	--	--
	10/17/2001	159.58	14.38	145.20	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	1.9	--	--	--
	1/11/2002	159.58	7.50	152.08	0.00	--	--	--	140	57	<0.50	<0.50	<0.50	5.9	--	--	--
	4/26/2002	159.58	9.67	149.91	0.00	--	--	--	140	16	<0.50	3.2	<0.50	2.3	--	--	--
	7/30/2002	159.58	12.24	147.34	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	1.7	--	--	--
	10/30/2002	159.58	14.17	145.41	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	1.6	--	--	--
	1/8/2003	159.58	7.26	152.32	0.00	--	--	--	61	18	<0.50	<0.50	<0.50	4.3	--	--	--
	4/9/2003	159.58	8.85	150.73	0.00	--	--	--	510	110	<0.50	3.8	5.5	4.3	--	--	--
	7/9/2003	159.58	10.77	148.81	0.00	--	--	--	170	<0.50	<0.50	<0.50	<0.50	3.3	--	--	--
	10/9/2003	159.58	13.50	146.08	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	2.0	--	--	--
	1/8/2004	159.58	7.36	152.22	0.00	--	--	--	190	62	<0.50	<0.50	<0.50	7.0	--	--	--
	4/9/2004	159.58	Not Monitored due to vehicle obstructing well access.														
	6/24/2004	159.58	11.91	147.67	0.00	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	2.30	--	--	--
	9/16/2004	159.58	14.97	144.61	0.00	--	--	--	53	<0.50	0.59	0.66	2.20	2.80	ND	--	--

Table 2
GROUNDWATER ELEVATIONS AND ANALYTICAL DATA
421 Santa Rosa Avenue
Santa Rosa, California
Clearwater Group Project No. AB021C

Well-No.	Date	TOC (feet)	DTW (feet)	GWE (feet)	LNAPL (feet)	O&G (µg/L)	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	Benzene (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	ETBE, TBA, DIPE, TAME (µg/L)	1,2 DCA (µg/L)	EDB (µg/L)
MW-7	1/13/2005	159.58	6.68	152.90	0.00	--	--	--	490	180	16.00	2.10	11.00	3.90	--	--	--
MW-8	12/11/2000	159.98	13.11	146.87	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	<5.0†	--	--	--
	3/1/2001	159.29	7.06	152.23	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	2.1	<0.50 to <5.0	<0.50	<0.50
	5/29/2001	159.29	10.88	148.41	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	1.6	--	--	--
	7/20/2001	159.29	12.43	146.86	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	1.7	--		--
	10/17/2001	159.29	13.47	145.82	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	2.1	--	--	--
	1/11/2002	159.29	7.04	152.25	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	1.9	--	--	--
	4/26/2002	159.29	8.59	150.70	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	2.9	--	--	--
	7/30/2002	159.29	11.95	147.34	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	3.2	--	--	--
	10/30/2002	159.29	13.91	145.38	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	2.7	--	--	--
	1/8/2003	159.29	7.14	152.15	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	3.5	--	--	--
	4/9/2003	159.29	8.67	150.62	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	5.1	--	--	--
	7/9/2003	159.29	10.54	148.75	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	4.1	--	--	--
	10/9/2003	159.29	13.25	146.04	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	3.1	--	--	--
	1/8/2004	159.29	7.80	151.49	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	6.0	--	--	--
	4/9/2004	159.29	9.03	150.26	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	5.7	--	--	--
	6/24/2004	159.29	11.72	147.57	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	4.6	--	--	--
	9/16/2004	159.29	14.69	144.60	0.00	--	--	--	52	2.0	2.4	2.0	6.5	5.1	--	--	--
	1/13/2005	**159.29**	**6.59**	**152.70**	**0.00**	**--**	**--**	**--**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**2.2**	**--**	**--**	**--**
MW-9	12/11/2000	159.39	12.61	146.78	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	<5.0†	--	--	--
	3/1/2001	158.69	6.94	151.75	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	2.0	TBA = 5.1	<0.50	<0.50
	5/29/2001	158.69	10.40	148.29	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	3.5	--	--	--
	7/20/2001	158.69	11.98	146.71	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	1.6	--	--	--
	10/17/2001	158.69	13.61	145.08	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	4.9	--	--	--
	1/11/2002	158.69	7.02	151.67	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	41	--	--	--
	4/26/2002	158.69	9.04	149.65	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	18	--	--	--
	7/30/2002	158.69	11.48	147.21	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	9.9	--	--	--
	10/30/2002	158.69	13.38	145.31	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	12	--	--	--
	1/8/2003	158.69	6.94	151.75	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	44	--	--	--
	4/9/2003	158.69	8.25	150.44	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	15	--	--	--
	7/9/2003	158.69	10.09	148.60	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	18	--	--	--
	10/9/2003	158.69	12.74	145.95	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	12	--	--	--
	1/8/2004	158.69	6.70	151.99	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	26	--	--	--
	4/9/2004	158.69	8.55	150.14	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	7	--	--	--
	6/24/2004	158.69	11.18	147.51	0.00	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	12	--	--	--
	9/16/2004	158.69	14.17	144.52	0.00	--	--	--	150	4.3	6.9	6.9	23	8.6	ND	--	--
	1/13/2005	**158.69**	**6.16**	**152.53**	**0.00**	**--**	**--**	**--**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**20.0**	**--**	**--**	**--**
SB-14-H20	9/9/1994	--	--	--	--	--	--	--	1,800	580	71	120	350	--	--	--	--
SB-15-H20	9/9/1994	--	--	--	--	--	--	--	950	240	160	48	220	--	--	--	--
SB-16-H20	9/9/1994	--	--	--	--	--	--	--	1,400	250	34	120	420	--	--	--	--
SB-18-H20	9/9/1994	--	--	--	--	--	--	--	18	<0.50	<0.50	<0.50	2.4	--	--	--	--
SB-19-H20	9/8/1994	--	--	--	--	<5,000	<1,000	<1,000	36	<0.50	2.7	1.8	7.7	--	--	<0.50	--
SB-24-H20	9/8/1994	--	--	--	--	<5,000	<1,000	<1,000	22	<0.50	0.5	<0.50	1.8	--	--	2.0	--
SB-26-H20	9/8/1994	--	--	--	--	<5,000	<1,000	9,800^	12,000	2,000	1,600	380	2,100	--	--	0.7	--

Table 2
GROUNDWATER ELEVATIONS AND ANALYTICAL DATA
421 Santa Rosa Avenue
Santa Rosa, California
Clearwater Group Project No. AB021C

Well-No.	Date	TOC (feet)	DTW (feet)	GWE (feet)	LNAPL (feet)	O&G (µg/L)	TPHmo (µg/L)	TPHd (µg/L)	TPHg (µg/L)	Benzene (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	ETBE, TBA, DIPE, TAME (µg/L)	1,2 DCA (µg/L)	EDB (µg/L)

Notes:

Well No.	Well designation
Date	Sample collection date
TOC	Elevation at the top of the well casing referenced to City of Santa Rosa bench mark C-41, relative to MSL as of 3/1/01
DTW	Depth to water
GWE	Ground water elevation
LNAPL	Light Non-Aqueous Phase Liquid hyrocarbons present, sheen = <0.01-foot thick
O&G	Oil Grease using DHOS Method 553
TPHmo	Total Petroleum Hydrocarbons as Motor Oil byEPA Method 8015M
TPHd	Total Petroleum Hydrocarbons as Diesel byEPA Method 8015M
TPHg	Total Petroleum Hydrocarbons as Gasoline byEPA Method 8015M or 8260B
BTEX	Benzene, Toluene, Ethylbenzene, and total Xylenes by EPA Method 8020 or 8260B

Notes:

MTBE	Methyl tert-Butyl Ether by EPA Method 8260B
ETBE, TBA, DIPE, TAME	Fuel Oxygenates by EPA Method 8260B
1,2 DCA	1,2-Dichloroethane by EPA Method 8260B
EDB	1,2-Dibromoethane by EPA Method 8260B
µg/L	micrograms per liter (approximately equal to parts per billion)
--	Not tested, not measured
<###	Not detected in concentrations exceeding the indicated laboratory reporting limit
^	Labortory reports lighter than diesel range hydrocarbons present in sample (from GPI reports)
*	Labortory report indicates chromatogram atypical of gasoline
†	MTBE by EPA Method 8020

Table 3

CURRENT GROUNDWATER ELEVATIONS AND SAMPLE ANALYTICAL RESULTS

421 Santa Rosa Avenue

Santa Rosa, California

Well I. D.	Sampling Date	TOC (feet)	DTW (feet)	GWE (feet)	DO mg/L	ORP mV	Total Fe mg/L	Fe^{2+} mg/L
MW-1A	9/16/2004	159.30	12.77	146.53	1.0	63	2.8	2.0
	1/13/2005	159.30	4.96	154.34	0.1	43	3.4	2.8
MW-2A	9/16/2004	158.83	13.17	145.66	0.6	35	5.6	3.4
	1/13/2005	158.83	4.98	153.85	0.1	33	3.8	2.6
MW-4	9/16/2004	156.91	11.04	145.87	0.3	39	5.0	3.8
	1/13/2005	156.91	2.99	153.92	0.1	43	3.4	2.8
MW-5	9/16/2004	157.42	11.01	146.41	0.1	35	3.0	2.8
	1/13/2005	**157.42**	**3.16**	**154.26**	**0.1**	**27**	**3.8**	**2.4**
MW-6	9/16/2004	158.95	12.28	146.67	0.2	15	0.0	0.0
	1/13/2005	**158.95**	**4.32**	**154.63**	**0.0**	**36**	**1.2**	**0.0**
MW-7	9/16/2004	159.58	14.97	144.61	0.3	48	1.0	0.0
	1/13/2005	**159.58**	**6.68**	**152.90**	**0.5**	**44**	**0.0**	**0.0**
MW-8	9/16/2004	159.29	14.69	144.60	6.6	36	0.0	0.0
	1/13/2005	**159.29**	**6.59**	**152.70**	**0.6**	**35**	**0.1**	**0.0**
MW-9	9/16/2004	158.69	14.17	144.52	0.8	33	1.5	0.0
	1/13/2005	**158.69**	**6.16**	**152.53**	**0.0**	**34**	**0.2**	**0.0**

Notes:

TOC	Top of casing elevation referenced to project datum
DTW	Depth to water below TOC
GWE	Groundwater elevation (TOC-DTW)
DO	dissolved oxygen - milligrams per liter (mg/L)
ORP	oxidation-reduction potential - millivolts (mV)
Total Fe	total iron - milligrams per liter (mg/L)
Fe^{2+}	ferrous iron - milligrams per liter (mg/L)

APPENDIX A

Clearwater's Field Protocols

CLEARWATER GROUP

Groundwater Monitoring and Sampling Field Procedures

Groundwater Monitoring

Prior to beginning, a decontamination area is established. Decontamination procedures consist of scrubbing downhole equipment in an Alconox® solution wash (wash solution is pumped through any purging pumps used), and rinsing in a first rinse of potable water and a second rinse of potable water or deionized water if the latter is required. Any non-dedicated downhole equipment is decontaminated prior to use.

Prior to purging and sampling a well, the static water level is measured to the nearest 0.01 feet with an electronic water sounder. Depth to bottom is typically measured once per year, at the request of the project manager, and during Clearwater's first visit to a site. If historical analytical data are not available, with which to establish a reliable order of increasing well contamination, the water sounder and tape will be decontaminated between each well. If floating separate-phase hydrocarbons (SPH) are suspected or observed, SPH is collected using a clear, open-ended product bailer, and the thickness is measured to the nearest 0.01 feet in the bailer. SPH may alternatively be measured with an electronic interface probe. Any monitoring well containing a measurable thickness of SPH before or during purging is not additionally purged and no sample is collected from that well. Wells containing hydrocarbon sheen are sampled unless otherwise specified by the project manager. Field observations such as well integrity as well as water level measurements and floating product thicknesses are noted on the Gauging Data/Purge Calculations form.

Well Purging

Each monitoring well to be sampled is purged using either a PVC bailer or a submersible pump. Physical parameters (pH, temperature and conductivity) of the purge water are monitored during purging activities to assess if the water sample collected is representative of the aquifer. If required, parameters such as dissolved oxygen, turbidity, salinity etc. are also measured. Samples are considered representative if parameter stability is achieved. Stability is defined as a change of less than 0.25 pH units, less than 10% change in conductivity in micro mhos, and less than 1.0 degree centigrade (1.8 degrees Fahrenheit) change in temperature. Parameters are measured in a discreet sample decanted from the bailer separately from the rest of the purge water. Parameters are measured at least four times during purging; initially, and at volume intervals of one well volume. Purging continues until three well casing volumes have been removed or until the well completely dewaters. Wells which dewater or demonstrate a slow recharge may be sampled after fewer than three well volumes have been removed. Well purging information is recorded on the Purge Data sheet. All meters used to measure parameters are calibrated daily. Purge water is sealed, labeled, and stored on site in D.O.T.-approved 55-gallon drums. After being chemically profiled, the water is removed to an appropriate disposal facility by a licensed waste hauler.

Groundwater Sample Collection

Groundwater samples are collected immediately after purging or, if purging rate exceeds well recharge rate, when the well has recharged to at least 80% of its static water level. If recharge is extremely slow, the well is allowed to recharge for at least two hours, if practicable, or until sufficient volume has accumulated for sampling. The well is sampled within 24 hours of purging or repurged. Samples are collected using polyethylene bailers, either disposable or dedicated to the well. Samples being analyzed for compounds most sensitive to volatilization are collected first. Water samples are placed in appropriate laboratory-supplied containers, labeled, documented on a chain of custody form and placed on ice in a cooler for transport to a state-certified analytical laboratory. Analytical detection limits match or surpass standards required by relevant local or regional guidelines.

Quality Assurance Procedures

To prevent contamination of the samples, Clearwater personnel adhere to the following procedures in the field:

- A new, clean pair of latex gloves is put on prior to sampling each well.
- Wells are gauged, purged and groundwater samples are collected in the expected order of increasing degree of contamination based on historical analytical results.

- All purging equipment will be thoroughly decontaminated between each well, using the procedures previously described at the beginning of this section.

- During sample collection for volatile organic analysis, the amount of air passing through the sample is minimized. This helps prevent the air from stripping the volatiles from the water. Sample bottles are filled by slowly running the sample down the side of the bottle until there is a convex meniscus over the mouth of the bottle. The lid is carefully screwed onto the bottle such that no air bubbles are present within the bottle. If a bubble is present, the cap is removed and additional water is added to the sample container. After resealing the sample container, if bubbles still are present inside, the sample container is discarded and the procedure is repeated with a new container.

Laboratory and field handling procedures may be monitored, if required by the client or regulators, by including quality control (QC) samples for analysis with the groundwater samples. Examples of different types of QC samples are as follows:

- Trip blanks are prepared at the analytical laboratory by laboratory personnel to check field handling procedures. Trip blanks are transported to the project site in the same manner as the laboratory-supplied sample containers to be filled. They are not opened, and are returned to the laboratory with the samples collected. Trip blanks are analyzed for purgeable organic compounds.

- Equipment blanks are prepared in the field to determine if decontamination of field sampling equipment has been effective. The sampling equipment used to collect the groundwater samples is rinsed with distilled water which is then decanted into laboratory-supplied containers. The equipment blanks are transported to the laboratory, and are analyzed for the same chemical constituents as the samples collected at the site.

- Duplicates are collected at the same time that the standard groundwater samples are being collected and are analyzed for the same compounds in order to check the reproducibility of laboratory data. They are typically only collected from one well per sampling event. The duplicate is assigned an identification number that will not associate it with the source well.

Generally, trip blanks and field blanks check field handling and transportation procedures. Duplicates check laboratory procedures. The configuration of QC samples is determined by Clearwater depending on site conditions and regulatory requirements.

APPENDIX B

Field Gauging and Purging logs

CLEARWATER GROUP

229 Tewksbury Ave, Point Richmond, CA 94801
Phone: (510)307-9943 Fax: (510) 232-2823

WELL GAUGING/PURGING CALCULATIONS DATA SHEET

Date: 1/13/05 | Job No.: ABOTIC | Location: Santa Rosa

Tech(s): Eric Austin, Rodney Berry

Drums on Site @TOA — Soil: 0 Water: 0

Drums on Site @ TOD — Soil: 0 Water: 0

Well No	Diameter (in)	DTB (ft)	DTW (ft)	ST (ft)	CV (gal)	PV (gal)	SPL (ft)	Notes
MW-1	2	19.62	4.96	14.66	2.34	7.02		
MW-2		19.72	4.98	14.74	2.35	7.05		
MW-3		[illegible]	8.93/2.99	15.94	2.55	7.65		
MW-5		19.00	3.16	15.84	2.53	7.59		
MW-6		19.53	4.32	15.21	2.43	7.29		
MW-7		19.14	6.68	12.45	1.99	5.96		
MW-8		19.25	6.59	12.66	2.02	6.06		
MW-9		18.14	6.16	11.98	1.91	5.73		

Explanation:
DTB = Depth to Bottom
DTW = Depth to Water
ST = Saturated Thickness (DTB-DTW)
CV = Casing Volume (ST x cf)
PV = Purge Volume (standard 3 x CV, well development 10 x CV)
SPL = Thickness of Separate Phase Liquid

Conversion Factors (cf)
2-inch diameter well cf=0.16 gal/ft
4-inch diameter well cf=0.65 gal/ft
6-inch diameter well cf=1.44 gal/ft

PURGING DATA

SHEET 1 OF 3

Job No.: ABO21C Location: Santa Rosa Date: 11/3/05 Tech: Eric Austin, Rodney Berry

WELL No.	TIME	VOLUME (gal.)	COND. (mS/cm)	TEMP.	pH	
MW-8	1130	2.00	572	62.3	6.54	Sample for: Fe-tot, Fe 2+ 0.0
Calc. purge	1135	4.00	611	62.3	6.55	TPHg TPHd 8010
volume	1140	6.00	705	62.3	6.51	BTEX Other MTBE
~~6.00~~ 6.06						Purging Method:
						PVC bailer / Pump
COMMENTS: color, turbidity, recharge, sheen						Sampling Method:
CLEAR, low, GOOD, NO SHEEN						Dedicated / Disposable bailer

~~DO=035~~ (ORP) ~~ORP=60.6~~ (DO) 1145

WELL No.	TIME	VOLUME (gal.)	COND. (mS/cm)	TEMP. (deg. F.)	pH	
MW-9	1151	2.00	445	62.2	6.55	Sample for: Fe = 0.2, Fe 2+ = 0.0
Calc. purge	1153	4.00	487	62.2	6.53	TPHg TPHd 8010
volume	1157	6.00	556	62.3	6.56	BTEX Other MTBE
5.73						Purging Method:
						PVC bailer / Pump
COMMENTS: color, turbidity, recharge, sheen						Sampling Method:
CLEAR, low, GOOD, NO SHEEN						Dedicated / Disposable bailer

1200 ~~DO=034~~ (ORP) ~~ORP=00.0~~ (DO)

WELL No.	TIME	VOLUME (gal.)	COND. (mS/cm)	TEMP. (deg. F.)	pH	
MW-7	12:00	2.00	496	56.7	6.80	Sample for: Fe -00, Fe 2+ 00
Calc. purge	12:07	4.00	741	61.3	6.70	TPHg TPHd 8010
volume	12:13	6.00	732	61.8	6.50	BTEX Other
5.96						Purging Method:
						PVC bailer / Pump
COMMENTS: color, turbidity, recharge, sheen						Sampling Method:
TAN/Yellow, low, OR						Dedicated / Disposable bailer

1215 DO 00.5 ORP 044

CLEARWATER GROUP, 229 Tewksbury Ave., Point Richmond, California 94801
Phone: 510-307-9943 Fax: 510-232-2823

PURGING DATA

SHEET 2 OF 3

Job No.: ABOIC Location: San La Rosa Date: 11/3/05 Tech: Eva Austin / Rodney Berry

WELL No.	TIME	VOLUME (gal.)	COND. (mS/cm)	TEMP. (deg. F.)	pH
MW-6	1218	2.00	545	60.4	6.65
Calc. purge	1222	3.00	538	62.9	6.69
volume	1235	7.50	530	65.3	6.64
7.29					

DO=00.0 1230 ORP=036

Sample for: Fe = 1.2 Fe2+ = 0.0
TPHg TPHd 8010
BTEX Other MTBE

Purging Method:
PVC bailer / Pump

Sampling Method:
Dedicated / Disposable bailer

COMMENTS: color, turbidity, recharge, sheen
CLEAR, low, GOOD, NO SHEEN

WELL No.	TIME	VOLUME (gal.)	COND. (mS/cm)	TEMP. (deg. F.)	pH
MW-5		2.00	491	66.3	6.71
Calc. purge		400	483	67.8	6.65
volume		800	487	68.2	6.63
7.59					

1245 DO = 00.1 ORP = 027

Sample for: Fe = 3.8 Fe2+ = 2.4
TPHg TPHd 8010
BTEX Other MTBE

Purging Method:
PVC bailer / Pump

Sampling Method:
Dedicated / Disposable bailer

COMMENTS: color, turbidity, recharge, sheen
TAN, Low, OR

WELL No.	TIME	VOLUME (gal.)	COND. (mS/cm)	TEMP. (deg. F.)	pH
MW-2A	1248	2.00	703	60.2	6.58
Calc. purge	1253	4.00	709	63.3	6.57
volume	1258	7.50	706	63.3	6.57
7.05					

1300 DO = 00.1 ORP = 033

Sample for: Fe = 3.8 Fe2+ = 2.6 2.6
TPHg TPHd 8010
BTEX Other MTBE

Purging Method:
PVC bailer / Pump

Sampling Method:
Dedicated / Disposable bailer

COMMENTS: color, turbidity, recharge, sheen
CLEAR, low, GOOD, No SHEEN, ODOR

CLEARWATER GROUP, 229 Tewksbury Ave., Point Richmond, California 94801
Phone: 510-307-9943 Fax: 510-232-2823

PURGING DATA

SHEET 3 OF 3

Job No.: ABO21C Location: Santa Rosa Date: 11/13/05 Tech: Eric Austin, Rodney Brierly

WELL No.	TIME	VOLUME (gal.)	COND. (mS/cm)	TEMP. (deg. F.)	pH
MW-4	1306	3.00	756	60.4	6.38
Calc. purge	1310	6.00	748	65.8	6.47
volume	1313	8.00	752	66.3	6.45
7.65					

DO=00.1 1315 ORP=043

Sample for: Fe = 3.4 Fe2+ = 2.8

TPHg TPHd 8010

BTEX Other MTBE

Purging Method:

PVC bailer / Pump

COMMENTS: color, turbidity, recharge, sheen

Tan, slight, OR, Low turbidity, ODOR

Sampling Method:

Dedicated / Disposable bailer

WELL No.	TIME	VOLUME (gal.)	COND. (mS/cm)	TEMP. (deg. F.)	pH
MW-1A	1320	2.00	646	63.1	6.69
Calc. purge	1331	4.00	636	62.0	6.61
volume	1340	7.00	610	62.2	6.56
7.02					

DO=00.1 1345 ORP=038 Fe = 1.8 Fe2+ = 1.2

Sample for:

TPHg TPHd 8010

BTEX Other MTBE

Purging Method:

PVC bailer / Pump

COMMENTS: color, turbidity, recharge, sheen

Clear, low, low, ODOR

Sampling Method:

Dedicated / Disposable bailer

WELL No.	TIME	VOLUME (gal.)	COND. (mS/cm)	TEMP. (deg. F.)	pH
Calc. purge					
volume					

Sample for:

TPHg TPHd 8010

BTEX Other

Purging Method:

PVC bailer / Pump

COMMENTS: color, turbidity, recharge, sheen

Sampling Method:

Dedicated / Disposable bailer

CLEARWATER GROUP, 229 Tewksbury Ave., Point Richmond, California 94801
Phone: 510-307-9943 Fax: 510-232-2823

APPENDIX C

Laboratory Analytical Reports and Chain-of-Custody Record

KIFF ANALYTICAL LLC

Report Number : 41975
Date : 01/21/2005

Matthew Ryder-Smith
Clearwater Group, Inc.
229 Tewksbury Avenue
Point Richmond, CA 94801

Subject : 8 Water Samples
Project Name : 421 Santa Rosa
Project Number : ABO21C

Dear Mr. Ryder-Smith,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Joel Kiff

KIFF ANALYTICAL LLC

Report Number : 41975

Date : 01/21/2005

Project Name : **421 Santa Rosa**

Project Number : **ABO21C**

Sample : **MW-1A** Matrix : Water Lab Number : 41975-01

Sample Date :01/13/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**820**	4.0	ug/L	EPA 8260B	01/18/2005
Toluene	**110**	1.0	ug/L	EPA 8260B	01/21/2005
Ethylbenzene	**1900**	4.0	ug/L	EPA 8260B	01/18/2005
Total Xylenes	**2600**	4.0	ug/L	EPA 8260B	01/18/2005
Methyl-t-butyl ether (MTBE)	**< 1.0**	1.0	ug/L	EPA 8260B	01/21/2005
TPH as Gasoline	**28000**	400	ug/L	EPA 8260B	01/18/2005
1,2-Dichloroethane	**< 1.0**	1.0	ug/L	EPA 8260B	01/21/2005
Toluene - d8 (Surr)	99.5		% Recovery	EPA 8260B	01/18/2005
4-Bromofluorobenzene (Surr)	102		% Recovery	EPA 8260B	01/18/2005
Dibromofluoromethane (Surr)	104		% Recovery	EPA 8260B	01/18/2005
1,2-Dichloroethane-d4 (Surr)	103		% Recovery	EPA 8260B	01/18/2005

Sample : **MW-2A** Matrix : Water Lab Number : 41975-02

Sample Date :01/13/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**86**	0.50	ug/L	EPA 8260B	01/17/2005
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	01/17/2005
Ethylbenzene	**190**	0.50	ug/L	EPA 8260B	01/17/2005
Total Xylenes	**1.7**	0.50	ug/L	EPA 8260B	01/17/2005
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	01/17/2005
TPH as Gasoline	**3000**	50	ug/L	EPA 8260B	01/17/2005
Toluene - d8 (Surr)	98.6		% Recovery	EPA 8260B	01/17/2005
4-Bromofluorobenzene (Surr)	102		% Recovery	EPA 8260B	01/17/2005

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 41975
Date : 01/21/2005

Project Name : **421 Santa Rosa**
Project Number : **ABO21C**

Sample : **MW-4** Matrix : Water Lab Number : 41975-03
Sample Date :01/13/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**330**	0.50	ug/L	EPA 8260B	01/19/2005
Toluene	**17**	0.50	ug/L	EPA 8260B	01/19/2005
Ethylbenzene	**60**	0.50	ug/L	EPA 8260B	01/19/2005
Total Xylenes	**88**	0.50	ug/L	EPA 8260B	01/19/2005
Methyl-t-butyl ether (MTBE)	**1.4**	0.50	ug/L	EPA 8260B	01/19/2005
TPH as Gasoline	**2900**	50	ug/L	EPA 8260B	01/19/2005
Toluene - d8 (Surr)	94.8		% Recovery	EPA 8260B	01/19/2005
4-Bromofluorobenzene (Surr)	102		% Recovery	EPA 8260B	01/19/2005

Sample : **MW-5** Matrix : Water Lab Number : 41975-04
Sample Date :01/13/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**0.53**	0.50	ug/L	EPA 8260B	01/18/2005
Toluene	**2.8**	0.50	ug/L	EPA 8260B	01/18/2005
Ethylbenzene	**32**	0.50	ug/L	EPA 8260B	01/18/2005
Total Xylenes	**68**	0.50	ug/L	EPA 8260B	01/18/2005
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	01/18/2005
TPH as Gasoline	**2400**	50	ug/L	EPA 8260B	01/18/2005
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	01/18/2005
4-Bromofluorobenzene (Surr)	97.7		% Recovery	EPA 8260B	01/18/2005

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KIFF ANALYTICAL LLC

Report Number : 41975
Date : 01/21/2005

Project Name : **421 Santa Rosa**
Project Number : **ABO21C**

Sample : **MW-6** Matrix : Water Lab Number : 41975-05
Sample Date :01/13/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	01/18/2005
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	01/18/2005
Ethylbenzene	**2.9**	0.50	ug/L	EPA 8260B	01/18/2005
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	01/18/2005
Methyl-t-butyl ether (MTBE)	**< 0.50**	0.50	ug/L	EPA 8260B	01/18/2005
TPH as Gasoline	**180**	50	ug/L	EPA 8260B	01/18/2005
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	01/18/2005
4-Bromofluorobenzene (Surr)	109		% Recovery	EPA 8260B	01/18/2005

Sample : **MW-7** Matrix : Water Lab Number : 41975-06
Sample Date :01/13/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**180**	0.50	ug/L	EPA 8260B	01/18/2005
Toluene	**16**	0.50	ug/L	EPA 8260B	01/18/2005
Ethylbenzene	**2.1**	0.50	ug/L	EPA 8260B	01/18/2005
Total Xylenes	**11**	0.50	ug/L	EPA 8260B	01/18/2005
Methyl-t-butyl ether (MTBE)	**3.9**	0.50	ug/L	EPA 8260B	01/18/2005
TPH as Gasoline	**490**	50	ug/L	EPA 8260B	01/18/2005
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	01/18/2005
4-Bromofluorobenzene (Surr)	107		% Recovery	EPA 8260B	01/18/2005

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KIFF ANALYTICAL LLC

Report Number : 41975
Date : 01/21/2005

Project Name : **421 Santa Rosa**
Project Number : **ABO21C**

Sample : **MW-8** Matrix : Water Lab Number : 41975-07
Sample Date :01/13/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	01/18/2005
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	01/18/2005
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	01/18/2005
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	01/18/2005
Methyl-t-butyl ether (MTBE)	**2.2**	0.50	ug/L	EPA 8260B	01/18/2005
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	01/18/2005
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	01/18/2005
4-Bromofluorobenzene (Surr)	97.2		% Recovery	EPA 8260B	01/18/2005

Sample : **MW-9** Matrix : Water Lab Number : 41975-08
Sample Date :01/13/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	01/18/2005
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	01/18/2005
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	01/18/2005
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	01/18/2005
Methyl-t-butyl ether (MTBE)	**20**	0.50	ug/L	EPA 8260B	01/18/2005
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	01/18/2005
Toluene - d8 (Surr)	99.8		% Recovery	EPA 8260B	01/18/2005
4-Bromofluorobenzene (Surr)	100		% Recovery	EPA 8260B	01/18/2005

Approved By: Joel Kiff

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Report Number : 41975

Date : 01/21/2005

QC Report : Method Blank Data

Project Name : **421 Santa Rosa**

Project Number : **ABO21C**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/17/2005
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/17/2005
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/17/2005
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/17/2005
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/17/2005
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/17/2005
Toluene - d8 (Surr)	102		%	EPA 8260B	01/17/2005
4-Bromofluorobenzene (Surr)	103		%	EPA 8260B	01/17/2005
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/21/2005
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/21/2005
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/21/2005
Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/19/2005
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/19/2005
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/19/2005
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/19/2005
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/19/2005
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/19/2005
Toluene - d8 (Surr)	95.0		%	EPA 8260B	01/19/2005
4-Bromofluorobenzene (Surr)	99.4		%	EPA 8260B	01/19/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/18/2005
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/18/2005
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/18/2005
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/18/2005
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/18/2005
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/18/2005
Toluene - d8 (Surr)	100		%	EPA 8260B	01/18/2005
4-Bromofluorobenzene (Surr)	110		%	EPA 8260B	01/18/2005

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KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Report Number : 41975

Date : 01/21/2005

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **421 Santa Rosa**

Project Number : **ABO21C**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Benzene	41975-02	86	40.0	40.0	118	116	ug/L	EPA 8260B	1/17/05	81.2	75.5	7.27	70-130	25
Toluene	41975-02	<0.50	40.0	40.0	41.6	41.8	ug/L	EPA 8260B	1/17/05	104	104	0.399	70-130	25
Tert-Butanol	41975-02	<5.0	200	200	199	205	ug/L	EPA 8260B	1/17/05	99.7	103	3.02	70-130	25
Methyl-t-Butyl Ether	41975-02	<0.50	40.0	40.0	35.8	35.7	ug/L	EPA 8260B	1/17/05	89.6	89.2	0.495	70-130	25
Benzene	42019-04	1.8	39.2	39.4	42.4	43.4	ug/L	EPA 8260B	1/21/05	104	105	1.73	70-130	25
Toluene	42019-04	20	39.2	39.4	59.8	60.5	ug/L	EPA 8260B	1/21/05	101	102	1.11	70-130	25
Tert-Butanol	42019-04	<5.0	196	197	194	199	ug/L	EPA 8260B	1/21/05	99.1	101	1.56	70-130	25
Methyl-t-Butyl Ether	42019-04	<0.50	39.2	39.4	36.5	37.6	ug/L	EPA 8260B	1/21/05	93.0	95.2	2.36	70-130	25
Benzene	41983-13	<0.50	40.0	40.0	39.9	38.6	ug/L	EPA 8260B	1/19/05	99.8	96.4	3.52	70-130	25
Toluene	41983-13	<0.50	40.0	40.0	37.7	37.2	ug/L	EPA 8260B	1/19/05	94.2	92.9	1.34	70-130	25
Tert-Butanol	41983-13	<5.0	200	200	198	201	ug/L	EPA 8260B	1/19/05	99.1	100	1.19	70-130	25
Methyl-t-Butyl Ether	41983-13	<0.50	40.0	40.0	40.9	40.6	ug/L	EPA 8260B	1/19/05	102	101	0.706	70-130	25
Benzene	41971-02	<0.50	40.0	40.0	39.4	38.5	ug/L	EPA 8260B	1/18/05	98.5	96.3	2.20	70-130	25
Toluene	41971-02	<0.50	40.0	40.0	39.8	38.7	ug/L	EPA 8260B	1/18/05	99.4	96.8	2.73	70-130	25
Tert-Butanol	41971-02	<5.0	200	200	199	200	ug/L	EPA 8260B	1/18/05	99.6	100	0.370	70-130	25
Methyl-t-Butyl Ether	41971-02	2.8	40.0	40.0	41.9	42.2	ug/L	EPA 8260B	1/18/05	97.6	98.4	0.718	70-130	25

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Report Number : 41975

Date : 01/21/2005

QC Report : Laboratory Control Sample (LCS)

Project Name : **421 Santa Rosa**

Project Number : **ABO21C**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	40.0	ug/L	EPA 8260B	1/17/05	99.9	70-130
Toluene	40.0	ug/L	EPA 8260B	1/17/05	105	70-130
Tert-Butanol	200	ug/L	EPA 8260B	1/17/05	101	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	1/17/05	98.3	70-130
Benzene	40.0	ug/L	EPA 8260B	1/21/05	105	70-130
Toluene	40.0	ug/L	EPA 8260B	1/21/05	105	70-130
Tert-Butanol	200	ug/L	EPA 8260B	1/21/05	97.3	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	1/21/05	94.0	70-130
Benzene	40.0	ug/L	EPA 8260B	1/19/05	99.8	70-130
Toluene	40.0	ug/L	EPA 8260B	1/19/05	98.0	70-130
Tert-Butanol	200	ug/L	EPA 8260B	1/19/05	101	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	1/19/05	104	70-130
Benzene	40.0	ug/L	EPA 8260B	1/18/05	99.1	70-130
Toluene	40.0	ug/L	EPA 8260B	1/18/05	100	70-130
Tert-Butanol	200	ug/L	EPA 8260B	1/18/05	111	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	1/18/05	98.0	70-130

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

2795 2nd Street, Suite 300
Davis, CA 95616
Lab: 530.297.4800
Fax: 530.297.4808

Lab No. 44475 Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy/or PDF To): Matthew Ryder - Smith
Company/Address: Clearwater Group 229 Fourth Street Ave @ Richmond
Phone No.: (510) 307-9943 FAX No.: (510) 232-2823
Project Number: AB021C P.O. No:
Project Name: 421 Santa Rosa
Project Address: 421 Santa Rosa Ave Santa Rosa, CA

California EDF Report? [X] Yes [ ] No
Recommended but not mandatory to complete this section:
Sampling Company Log Code: CWGO
Global ID: T0-6-0-9-7-0-0-5-8-1
EDF Deliverable To (Email Address): [illegible]@clearwatergroup.com
Sampler Signature: Rodney Berry

Analysis Request

Sample Designation	Sampling Date	Sampling Time	Container: 40 ml VOA	Container: SLEEVE	Preservative: HCl	Preservative: HNO_3	Preservative: ICE	Preservative: NONE	Matrix: WATER	Matrix: SOIL	BTEX (8021B)	BTEX/TPH Gas/MTBE (8021B/M8015)	TPH as Diesel (M8015)	TPH as Motor Oil (M8015)	TPH Gas/BTEX/MTBE (8260B)	5 Oxygenates/TPH Gas/BTEX (8260B)	7 Oxygenates/TPH Gas/BTEX (8260B)	5 Oxygenates (8260B)	7 Oxygenates (8260B)	Lead Scav. (1,2 DCA & 1,2 EDB - 8260B)	EPA 8260B (Full List)	Volatile Halocarbons (EPA 8260B)	Lead (7421/239.2) TOTAL (X) W.E.T. (X)	TAT: 12 hr/24 hr/48 hr/72 hr/1 wk	For Lab Use Only
MW-1A	1/13/05	1340	X		X				X						X									1wk	01
MW-2A		1300	X																						02
MW-4		1315																							03
MW-5		1245																							04
MW-6		1230																							05
MW-7		1215																							06
MW-8		1145																							07
MW-9	✓	1200	✓		✓				✓						✓										08

	Date	Time		
Relinquished by: Rodney Berry	1/13/05	1600	Received by:	Remarks: MW-1A EXTRA 3 VOA'S FOR ANALYSIS FOR 1-2 DCA by 8260
Relinquished by:	Date	Time	Received by:	
Relinquished by:	Date 01/14/05	Time 1415	Received by Laboratory: [illegible] Kiff Analytical	Bill to:

Distribution: White - Lab, Pink - Originator

Forms/coc 121001.fh9